American Vegetable Grower

MAY • 1955

SPRAY AWAY YOUR WEED TROUBLES

King-Size Yields of King-Size VEGETABLES!

With STAUFFER CAPTAN 50-W and with CAPTAN 7.5 Dust!

STAUFFER CAPTAN CONTROLS THESE DISEASES:

TOMATO: Alternaria (Early Blight), Septoria, Phytophthora (Late Blight), Anthracnose, Stemphylium.

CUCURBITS: Angular Leaf Spot, Anthracnose, Downy Mildew

POTATO: Early and Late Blight.

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BEANS and PEAS: Damping off on Beans and Root Rot on Beans and Peas.

For King-Size yields of truly outstanding vegetable crops—for greater disease-control protection per dollar per acre, it's STAUFFER CAPTAN 50-W! This remarkably effective modern organic fungicide controls a wide variety of fungi on many vegetables and assures truly superior crops of exceptional size and quality. With CAPTAN, you can *see* the difference!

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Read about Stauffer CAPTAN in the May issue of Coronet

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Agricultural chemical research in STAUFFER laboratories across the nation constantly seeks to prove and improve products. From rigid laboratory tests, through pilot plant production and extensive field trials, new STAUFFER products are thoroughly evaluated and perfected before commercial quantities are offered to agriculture. Eminent plant pathologists, entomologists, and agronomists serve you, through each STAUFFER agricultural product.

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American
VEGETABLE GROWER

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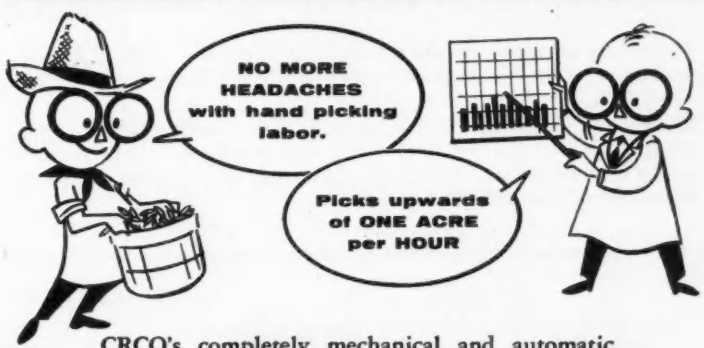

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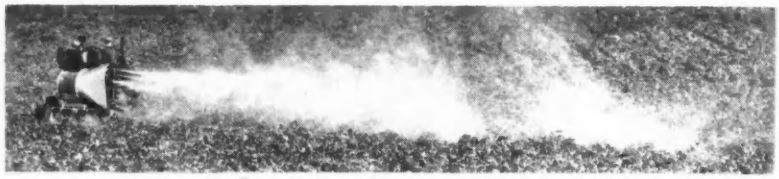
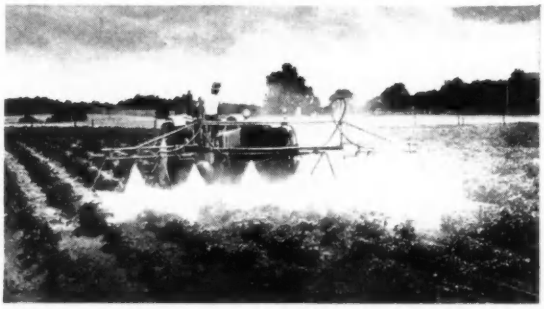


New Aircrop Sprayer Attachment in action. Note 60' swath and even spray distribution.

spray **20 ROWS** *with each pass . . . or* **6**

Trailer-mounted John Bean sprayer with 6-row boom does a fast, thorough spray job.



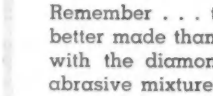
whatever your needs

YOU'LL BE AHEAD WITH A JOHN BEAN SPRAYER

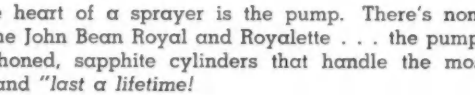
Considering air-type vs. boom spraying? Need a high clearance sprayer . . . or a trailer-mounted unit adjustable for varying crop heights and row widths? Want PTO or engine power? Or are you simply looking for a pump, boom or air-type conversion unit to add to present equipment?

Whatever your needs, there's a John Bean unit that's made to do the job right . . . by the people who've been the "leaders in sprayers" since 1883.

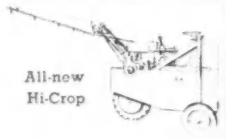
Remember . . . the heart of a sprayer is the pump. There's none better made than the John Bean Royal and Royalette . . . the pumps with the diamond-honed, sapphite cylinders that handle the most abrasive mixtures and *"last a lifetime!*



12-row Royal "35"



20-row Hydraulic



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John BEAN LANSING 4, MICHIGAN SAN JOSE, CALIFORNIA

Division of Food Machinery and Chemical Corporation

LETTERS TO THE EDITOR

Sweetpotato Varieties

Dear Editor:

We had a variety of the Jersey type sweetpotato now named Nemagold. This is what I believe you refer to as the Oklahoma sweetpotato in the article about Tom McGinnis. We do not class it as a yam type. We do feel it is the finest and best of the Jersey types.

We raised this for a few years with the following results: A very good set of roots, but never sizing them up. Not suitable for the St. Louis market. The long vines are a problem in tight soils. In some of the Jersey territory they give a good account of themselves. We faced the problem of a small crop by our standards, few if any seed orders, and a loser as a market potato. Again I say those who can use Jerseys may find it very good in some areas, especially where nematodes are a factor.

We have given up all varieties except a few which are outstanding here and in some special area. Only one is not a Miller introduction.

These include the **Allgold** yellow potato, of very good quality. Use as an early or storage potato. We have done considerable work on this potato and feel our strain, at least around St. Louis, is superior to the original. I do not believe it is of importance in its home state of Oklahoma. It is wilt resistant, but nematodes spell a failure. At St. Louis this potato is overcoming the feeling that only a red or copper potato is worth buying.

Earlyport. Not a Porto Rico; a distinct new creation. Copper skin, orange flesh, good quality, early planting for the green or uncured trade. Late plantings suitable for storage. This potato has proven a standout in some areas, not so good in others. Does well as far north as southern Michigan. It is one of the varieties we supply Gerber Products Co. for northern plantings.

Ranger. The favorite in the North. Also Gerber's favorite. The flesh is orange. The tan skin is a drawback as a market potato. Many home gardeners use it as it takes much punishment and is almost a sure producer.

Regular **Goldrush.** Bronze tan skin, tops in quality. Long season storage sort. We feel it will not produce above our latitude.

New **Copper Skin Goldrush.** Mutations in Louisiana and our own make up our stock. Same as Goldrush except for improved market appearance and perhaps less veining and as things look now a bit better producer. Some have done well with it that did not fare well with Goldrush.

This makes up our line for 1955. All others have been discontinued as each had some serious fault. As disease is the chief problem, we have held the best varieties and are now concentrating on new lines, some to be ready in a year or two.

We are sold out of all seed stocks but still have a capacity of 400,000 plants available of varieties mentioned.

St. Louis, Mo. C. & L. Leist

Look what MALATHION does for YOU

ON THESE CROPS — MALATHION CONTROLS THESE PESTS — WITH THIS DOSAGE

		Emulsifiable Liquid Per 100 gals.	Wettable Powder 25% Per 100 gals.	Dust Per Acre	Number of Applications	Days Before Harvest for Last Application
VEGETABLES	Thorough, full-coverage applications should be made.					
Tomatoes	Spider mites	1½ pts.	2 lbs.	35-40 lbs. 4 or 5%	1+	10
	Aphids	1 pt.	2 lbs.	4 or 5%	1+	10
Peas	Pea aphid	1½ pts.	—	25 lbs. 4 or 5%	1+	10
Beans	Mexican bean beetle	1½ pts.	—	30-35 lbs. 4 or 5%	2+	10
	Leafhopper	—	—	30-35 lbs. 4%	2+	10
	Spider mites	1-1½ pts.	—	—	2+	10
Cabbage Broccoli Kale, Turnip Mustard	Aphids Imported cabbage-worm Cabbage looper	1-2 pts.	2 lbs.	30 lbs. 4 or 5%	1+	10
Cucumber Squash Melon	Aphids Spider mites	1½ pts.	—	30-35 lbs. 4 or 5%	1+	10
	Do not apply malathion to cucurbits unless plants are dry.					
Eggplant	Aphids Spider mites	1 pt.	2 lbs.	—	1+	7
	Lace bug	3 pts.	—	—	1+	7
Peppers	Aphids	1 pt.	2 lbs.	—	1+	7
Beets	Aphids	1½-2 pts.	—	—	1+	10*
	*If tops are to be used as feed.					
Potatoes	Aphids	1 pt.	2½ lbs.	25-30 lbs. 5%	1+	10
Onions	Thrips	1½ pts.	4 lbs.	30-40 lbs. 4 or 5%	1+	5 days on green or spring onions —10 days on bulb onions
Spinach	Aphids	2 pts.	—	30-35 lbs. 4%	1+	10
Lettuce	Aphids	2 pts.	2 lbs.	30-40 lbs. 4%	1+	7
	Mites	—	—	30-40 lbs. 4%	1+	7
	Cabbage looper	—	—	30-40 lbs. 4%	1+	7
	Leafhoppers	2 pts.	—	—	1+	7

MALATHION gives you these 4 big advantages:

1. **High toxicity to insects**
2. **Low toxicity to man and animal**
3. **Quickly disappearing residues**
4. **Compatibility with most commonly used insecticides and fungicides**

CONSULT LOCAL AGRICULTURAL AUTHORITIES ON TIMING OF APPLICATIONS

This spray and dust chart is part of the new MALATHION GROWER'S GUIDE. Write for your free copy today.

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Antibiotics Now Offer Superior Blight Control

STREPTOMYCIN IS THE UNSURPASSED ANTIBIOTIC

AGRI-STREP,* the new, high potency, bacterial blight control spray, contains streptomycin. Extensive field tests have proved streptomycin to be the most potent, most stable, and most effective antibiotic for controlling certain bacterial plant diseases. That's why more than a dozen state experiment stations in all major producing areas are recommending its use this year.

In many tests, orchards sprayed with AGRI-STREP needed less than one blight cut for any two to three trees, while unsprayed trees required ten or more cuts a tree.

This is *big* money-making news for orchardists who grow apples, pears, or walnuts. For *now* you can boost market quality and prevent yield losses from fire blight in apples and pears—and blight in walnuts—by putting AGRI-STREP in your orchard blight control program.

Try AGRI-STREP for excellent control of these other plant diseases:

- **TOMATOES**—Bacterial Spot
- **PEPPERS**—Bacterial Spot
- **POTATOES**—Soft Rot and Black Leg
- **TOBACCO**—Wild Fire and Blue Mold

For details, consult your county extension agent or state experiment station.

Merck agricultural streptomycin is easy to use and readily available. It is sold as AGRI-STREP by Niagara Chemical Division, Food Machinery and Chemical Corp., Middleport, N. Y.; and as ORTHO STREPTOMYCIN by California Spray-Chemical Corp., Richmond, Calif. Contact their local representative or dealer.

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Research and Production for Improving the Nation's Agriculture

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DON'T LET JACK FROST Nip Your Plants

Miniature greenhouses protect tender plants, make it possible for you to supply early, profitable markets

By ELDON S. BANTA

EVERY vegetable variety has an optimum date, climatically, when its seed should be planted out-of-doors or when its plants should be transferred to the field. If we delay this date too long, the maturity and production of the crop may be adversely affected. Should we hurry it up, then we risk the dangers of frost and cold weather damage to tender crops.

However, there are times when very early plantings of such crops as tomatoes, eggplant, peppers, squash, cucumbers, and muskmelons may pay handsome dividends on the very early markets. These are all tender plants, subject to varying degrees of injury from light frosts. Prolonged cool weather after transferring plants to the field can often so delay growth that the advantages of early planting are lost.

The grower must therefore give some kind of protection to his plants when first transferred to the field. The method may vary with the crop as well as with the location in the country. The most widely adapted method is the use of individual plant covers. Glassine paper caps are used more than almost any other type of material.

There seems to be an increased use of protective caps in the Great Lakes region. Charles Zoller, of Benton Harbor, Mich., has used them for six years on early tomatoes and says he wouldn't grow early tomatoes without them. They serve as a life insurance policy for the plants, but the risks are high, and li ewise the premiums. The amount of returns depends upon how well you manage the use of caps.

This type of protection serves its purpose best where temperatures do not fluctuate widely from day to day,

Direct-seeded celery at Ruetenik Gardens, Orwell, Ohio, is covered with glassine paper to hasten germination and growth of seedlings. Paper is rolled over wire wickets and held in place with dirt. Holes in paper provide ventilation, which is very important.

where heavy rains do not beat down the caps, and where high-value crops are produced.

Paper caps are widely used in the Imperial Valley of California for forcing early muskmelons and tomatoes. In the case of melons the seed is planted in the field in December and January and each hill

These "king-sized" hot caps protect tomato plants on the Frank D. Suyehira farm, Emmett, Idaho. Wax paper-covered frames also support the vines, keeping the tomatoes out of the mud during irrigation. Paper is removed from frames after frost danger is past.

covered with a cap. This raises day temperatures and hastens germination of seeds while protecting the young plants from frost.

By early March when danger of frost is past the caps are removed and the plants are ready to bloom.

(*Continued on page 27*)

Protecting transplanted melons against frost until June pays off in an early quality crop for Allen F. Hand, New York grower. Here, helpers finish covering plants in a section of the 20-acre field.

SPRAY AWAY *Your* WEED TROUBLES

Follow directions carefully in applying herbicides to avoid making costly mistakes

Four pounds per acre of Alanap 1 applied immediately after planting to area between stakes 1 and 2 controlled all annual weeds in cucumber plots.

By S. K. RIES
Michigan State College

RECENTLY developed chemicals and better information on application have made chemical weed control more foolproof for the vegetable grower. Herbicides, however, are still the most difficult group of agricultural chemicals to use correctly. The eradication of weeds from a crop is usually more hazardous than the control of insects and diseases.

There is a range of tolerance for all weed chemicals but it is not wide enough to allow the grower to use the rate recommended per acre on bands covering only one-fourth of the area. Failure to provide sufficient agitation of wettable powders may result in little weed control on one portion of the field, and wipe out everything including the crop on the balance.

For effective weed control the following fundamental principles must be observed, and they should be followed more closely than those for any other cultural practice:

1) Weeds are killed most readily when environmental conditions are favorable for weed-seed germination and rapid plant growth. Crop plants are also most readily injured under these conditions, but the chemicals recommended are designed to selectively kill weeds under conditions favorable for plant growth.

2) Recommended chemicals are most effective in killing germinating seeds or young plants. With the exception of 2,4-D, they will not kill older plants at the recommended rates.

3) Close attention must be given to the recommended rate of application. The selectivity of chemicals for crop plants occurs only within limited ranges. There is no crop plant which is completely resistant to injury from herbicides.

4) After chemicals have been applied, the soil in the crop row should not be disturbed. The crop may be cultivated, but care must be taken not to throw soil to the crop, as the chemical layer in the row is destroyed and weed seeds may be brought to the surface where they readily germinate.

5) Rates vary with soil types. In general, the lower recommended rates should be used on the light soils. Most recommendations applying to mineral soils have to be increased to be effective on muck.

6) Know your weed species. This is important because several of the chemicals, such as chloro IPC, kill only certain weeds.

7) Most herbicides require moisture. Poor results from pre-emergence sprays frequently are due to lack of sufficient moisture in the soil to activate the chemicals and cause weed seed germination. If possible, apply chemicals when the soil is moist or can be irrigated.

8) Follow directions on the label.

Weed Sprayers—Chemicals may be applied in all types of sprayers. It is not necessary to buy expensive, high-gallonage, high-pressure spray equipment. A satisfactory weed control sprayer should have the following features:

1) A pump with a minimum capacity of 4 gallons per minute, which is inexpensive or easily replaced, and will not be damaged if wettable powders are used.

2) A solution agitation device, either mechanical or one that bypasses the solution from the pump to give liquid agitation.

3) Equipped with 50-mesh screens for suction line and nozzles. Wettable powders will not go through the 100-mesh screens which are often provided.

4) A spray boom that has adjustable nozzles for band spraying.

5) A gauge that measures pressure accurately up to 100 pounds per square inch.

6) Flat fan nozzles. The best nozzle size for general use is equivalent to an 8004 Teejet or a No. 59 Monarch nozzle. For most work, a wide angle nozzle (73°-80°) is best, because the boom may be held close to the ground to reduce drift.

Calibration of Sprayer—It is important that the sprayer is calibrated before applying chemicals. A range of 20 to 60 gallons per acre, at pressures of 20 to 60 pounds per square inch, is satisfactory. The boom should be adjusted so that the spray nozzle patterns overlap about one-third at the top of weeds being sprayed or at the ground level. For over-all spraying, this places the nozzles about 18 to 20 inches apart

on the boom and 18 to 20 inches from the sprayed surface. To calibrate a sprayer:

1) Fill the spray tank.
2) Spray a measured area at a fixed tractor speed and pressure gauge setting. (Be sure to allow for partial coverage if bands are used.)
3) Measure the amount of liquid necessary to refill the tank.
4) This amount divided by the portion of an acre sprayed will give the gallons per acre applied.
5) The amount of material desired per acre may then be mixed with the calculated volume of water.

For example, if 10 gallons were applied on one-fourth acre, the volume would be 40 gallons per acre. If changes are made in the tractor speed or gear, pressure setting, nozzle size, or number of nozzles, the amount of liquid applied per acre will be changed, and recalibration will be necessary.

Four pounds per acre of Sinox PE or Premerge applied when corn was in spike stage controlled annual weeds. Note weeds between rows not sprayed.

Four pounds per acre of DNBP (Premerge or Sinox PE) applied in crook stage controlled mustard, other annual weeds in beans.

Band Application — Since weeds in the row are usually the most difficult to control, it is often economical and practical to spray herbicides in a band over the row. The cost may be reduced by as much as 80 per cent. *If band applications are used, it is important that adjustment be made for the area actually sprayed and not the total acres of crop sprayed.* For example, if the recommendation for a chemical is 4 pounds per acre, and 12-inch strips are sprayed over 36-inch rows, only 1⅓ pounds of chemical will be required per acre, or the 4 pounds will cover three acres of the crop.

To adjust the sprayer for band application, lower the boom so that there is one nozzle over each row and plug the nozzles between rows. Adjustable booms or adapters should be purchased.

Cleaning the Sprayer—It is important to keep weed control sprayers clean. Sprayers which have contained 2,4-D should not be used for application of insecticides and fungicides.

In cleaning a sprayer it is important that the whole sprayer, inside and out, including the boom, hoses, and nozzles, be thoroughly rinsed with water before and after the cleaning procedure. The sprayer should be partially filled with water before the cleaning agent is added. The pump should be running so that the cleaning solution will circulate throughout the sprayer. Corrosive cleaning agents should not be allowed to stand in tanks more than two hours.

Where pre-emergence spraying only is practiced, adequate rinsing with water is sufficient. For other spraying purposes, weed-killers may be removed from sprayers by adding one of the following to 100 gallons of water.

1) 1 gallon household ammonia
2) 5 pounds sal soda (sodium carbonate)
3) 8 pounds of activated charcoal
4) 5 pounds paint cleaner (trisodium phosphate)

(*Continued on page* 26)

Two pounds per acre of chloro IPC applied immediately after planting, controlled chickweed and smartweed in the left portion of this field.

Two pounds of Karmex W per acre applied after discing in the spring controlled all of the annual weeds in the background portion.

Shelvie Baker, fieldman, and Jack Miller look over a hamper of top-quality tomatoes.

25 TONS OF TOMATOES Per Acre

Indiana's champion growers are quick to use available "know-how" in getting top yields

By F. C. GAYLORD

Purdue Agricultural Experiment Station

DURING the past 30 years, hundreds of Indiana tomato growers have been awarded gold medals for producing from 10 to 20 tons of tomatoes with average grades of upward of 70 per cent U. S. No. 1's.

In 1954, John Dillion produced 20.2 tons per acre, grading 77 per cent U. S. No. 1, to become the state champion in Indiana's U. S. "Won" Tomato Club. Carl E. Ross, of Walden was the first grower to receive the Master Craftsman Award, with an average yield of 26.3 tons per acre. His season's average grade was a little over 76 per cent U. S. No. 1.

In checking the record of champions for the past 25 years, all followed the same essentials. Of course, as research and scientific developments have pointed out better techniques and "know-how," these champions have been quick to use them. Thus, we have had a gradual increase in champion yields from 12 tons in 1926 to 26.3 tons in 1954.

In growing profitable yields, the first consideration must be soil. Tomatoes do best on fertile, well-drained soils. Through the years, clay loams and black loam soil have given the top yields. Under corn belt conditions, sandy soils are less favored as they retain less moisture and plant food. Soils that have had previous crops of deep-rooted legumes are best. Soils that will produce 100 bushels of corn or more per acre usually are capable of returning big yields of tomatoes.

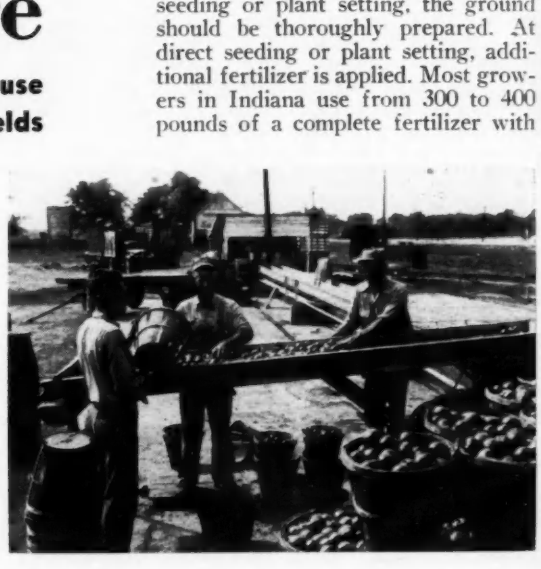
Many champions have added 8 to 10 tons of barnyard manure, even on fertile soils, to advantage. After the field has been selected, deep, early spring plowing (10 to 12 inches) is recommended. Many growers are plowing under 700 to 1,000 pounds of high analysis fertilizer per acre.

Before selecting the field, the acidity and plant food reserve in the soil should be determined. Good tomato soil should be slightly acid, one showing 6.5 to 6.8 pH. If the soil is below 6.3 pH, liming is desirable. Since yields over 10 tons require about 100 pounds of nitrogen, 35 pounds of phosphorus, and 175 pounds of potash, ample fertilizer to meet these or better yields must be applied in the form of commercial fertilizer.

Growers who want to be topnotchers should not guess, but start with tomato soil and then apply fertilizer to balance up deficiencies of each particular field. County agricultural agents or fieldmen will gladly help make tests for acidity and plant food reserve in the field selected as well as advise on the amounts and composition of fertilizer to be applied.

After plowing and before direct seeding or plant setting, the ground should be thoroughly prepared. At direct seeding or plant setting, additional fertilizer is applied. Most growers in Indiana use from 300 to 400 pounds of a complete fertilizer with a high phosphate content. When plants are set directly into the field, a starter solution such as 3 pounds of a 10 per cent nitrogen, 52 per cent phosphate, and 17 per cent potash, or similar soluble, in 50 gallons of water is applied with an ordinary tomato transplanter as the plants are set.

(Continued on page 23)



Federal inspection and removal of culls helps farmer, speeds canning operation.

STATE NEWS

- **California Aims to Ship Only Top-Quality Potatoes in 1955**
- **New Hampshire Growers Benefit from Market Tour of Boston**

Emphasis on Marketing

CALIFORNIA—Production is only half of the job facing the potato industry, the 1,000 growers, packers, shippers, and retailers attending the 11th annual convention of the Kern County Potato Growers Association have agreed.

The importance of the other half, marketing, was emphasized by all convention speakers, including Secretary of Agriculture Benson, who delivered the keynote address.

Benson praised California's marketing agreement and order program, which has established rigid rules designed to allow only top-quality potatoes on the retail market.

"If we are to build the sound, prosperous, and free agriculture that is our common goal, we must produce right and market right," said Benson. "Out here producing right is more than producing efficiently. It is producing for market demand—not glutting the market—keeping the market stable so far as possible by intelligent foresight."

In line with this, Don Maupin, secretary-manager of the California Long White Potato Advisory Board, announced that for the first time, 100 per cent compulsory inspection of potatoes will be enforced in the 1955 marketing program. Also, a campaign was unleashed this month in 30 of the largest cities in the nation, using the media of radio, television, newspapers, and billboards to popularize California Long White Potatoes. It is the biggest promotion program ever undertaken by this potato group.

Carlot shipments of Kern County potatoes began this month. A few of the earliest potatoes were shipped in April, and shipments will rise steadily through May, reaching their peak in early June. The 47,000 acres of potatoes came through an early spring cold spell with no serious injury.—*David N. Wright, Farm Advisor, Bakersfield.*

To Market, to Market . . .

NEW HAMPSHIRE—Vegetables have been going to market for a long time, but now vegetable *growers* are also going to market. One day in March, before dawn, 44 New Hampshire vegetable growers boarded a bus in Nashua to start off on a field trip to Boston. Their purpose? To see first-hand what happens to their produce after it reaches the big city.

The all-day bus tour, with six scheduled stops, was a real education in marketing for the soil tillers. Arriving at the South Boston Terminal Market at 6:30 A.M., they watched produce being unloaded by workers, and saw the modern refrigeration cars and trucks in action.

The Joseph Harris Fruit Auction was the next stop, where they watched an exciting sale of several carloads of tomatoes. Old, historic Faneuil Hall market was stop No. 3. Here they visited their commission man, and also saw a demonstration of prepacking squash raised by Colby Brothers, Inc., Litchfield, N.H.

OPEN HOT CAP SLOWLY

Hot cap removal should be a gradual process on tender vegetables, suggests Bernarr J. Hall, San Diego County, California, farm advisor. Plants under covers are very tender and need to be slowly exposed to outside conditions.

Cutting a two-inch slit in the top of the cap with a sharp knife is suggested for the first operation. As the plant reaches the top of the cap, the slit can be enlarged, allowing the tender plant to slowly grow out of it. Tomato and pepper plants will push through the top of the caps.

The vine crops such as cucumber and squash are brought out of the covers by lifting the east side of the cap and directing the runners in this direction. This allows the plants to be protected from westerly breezes. Days with mild temperatures are preferred in opening the caps.

Next on the marketing line was the fruit and vegetable warehouse of the First National Stores, which supplies over 250 stores in Massachusetts and New Hampshire. Next, retailing was observed at the consumer end at the chain's store in New Medford, where all produce is prepackaged. Final stop was the Suffolk Farms Packing Co., in Revere, where 22 different items of food are prepackaged.

The tour was planned by the Hillsboro County Extension Service, in co-operation with Louis Norwood, retail marketing specialist, New England extension service.—*Perley D. Colby, Assoc. County Agric. Agent, Milford.*

Carew from Cornell

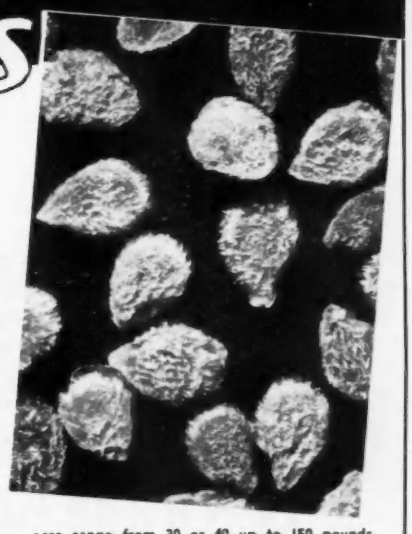
MICHIGAN—Dr. John Carew will join the staff of Michigan State College June 1 as extension specialist in vegetable production. He has been with Cornell University for the past seven years, and has conducted the well-known New York Vegetable Variety Field Day. Dr. Carew will

(*Continued on page* 12)

KNOW YOUR VEGETABLE SEEDS

By VICTOR R. BOSWELL
U. S. Department of Agriculture

TOMATO



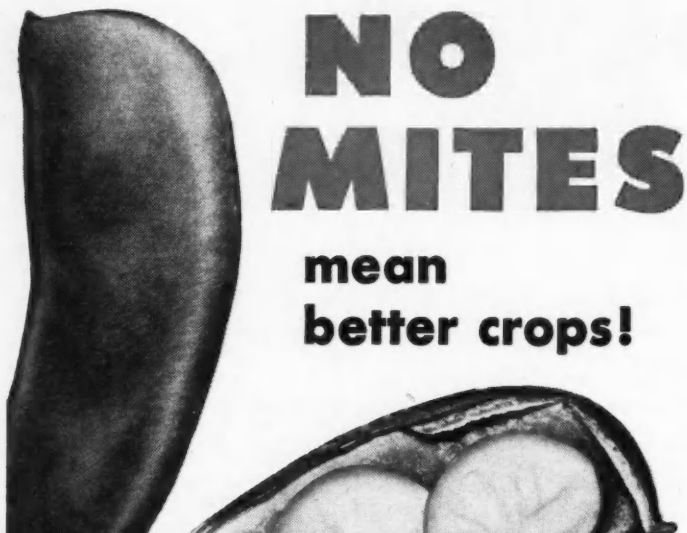
THE tomato is our No. 2 vegetable, second only to the potato, and the most universally grown in this country. In pounds very little seed is needed. Our annual production of tomato seed could be loaded onto a dozen or so modern trailer-trucks—some 300,000 to 350,000 pounds, grown on 4,000 to 5,000 acres. Tomato seed is produced extensively in California, Indiana, Ohio, Michigan, Pennsylvania, New York, New Jersey, Maryland, and Delaware, and to some extent in many other states. The humid eastern states are at no disadvantage from the standpoint of seed-borne diseases as they are in the production of many other kinds of vegetable seeds.

The only seed-borne tomato disease to cause great alarm is bacterial canker. Fortunately the causal organism is easily killed by the fermentation method of recovering the seed from the fruit. Leaving the seed in a fermenting mixture of pulp for about 96 hours at about 70° F. is effective. In the absence of canker 48 hours' fermentation is enough. Fermentation frees the woolly seeds of pulp and jelly thoroughly, giving an attractive finished product. Artificial dryers are common in the East, but not in the West. The more exacting seedsmen do not attempt to salvage the tomato pulp for food purposes.

Seed yields per ton of fruit range from about 5 to 15 pounds. Yields of seed per acre range from 30 or 40 up to 150 pounds or more, depending on variety and yield of tomatoes per acre.

F_1 hybrid tomato seed, produced by hand pollination, is very expensive and is produced in only small amounts. F_2 tomato seed comes from naturally self-pollinated flowers; so is not hybrid. Costs of producing F_2 seed and seed of ordinary varieties are comparable. Tomato seed is long-lived, showing less deterioration under poor storage conditions than any other vegetable seed studied.

NO MITES mean better crops!



kill and control mites with

ARAMITE®

There's more money for you from better crops. A small per-acre investment in Aramite can make a big dollar difference. Year after year, field results nationwide prove the bigger and better yields you can expect with Aramite—the safest, best-known mite-killer today.

Aramite gives outstanding control of most mite species including Two-Spotted, Atlantic, and European Mites. Equally effective on melons, citrus, corn, tomatoes, apples, peaches, and ornamentals. It is compatible with most insect and fungus-killing chemicals, has longer residual activity and is non-hazardous to humans and animals.

Order Aramite from your local supplier today. Write, wire or phone us if unable to locate immediate source of supply.

Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

US RUBBER

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

STATE NEWS

(*Continued from page* 11)

work primarily with fresh market growers.

A new type of machine for carrying workers snapping asparagus has been developed by John Pfauth, St. Joseph. This machine has a three-point attachment off the tractor's hydraulic lift. It carries three workers, and will cost about $90.—*S. K. Ries, Dept. of Hort., East Lansing.*

Onions to Congress

TEXAS—Texas growers and Texas congressmen co-operated in a publicity stunt last month to focus national attention on the new, tender, sweet Texas onions.

Twenty thousand pounds of new onions were rushed by truck from south Texas fields to the Capitol steps, where wives of the Texas delegation, gaily dressed in Mexican costume, distributed the onions to members of Congress. Packed in specially-designed bags, the onions were the gift of the Texas Citrus and Vegetable Growers and Shippers Association.

EUROPEAN TOUR

THE Vegetable Growers Association of America announces its first Grand Field Trip of Europe August 11-September 25. The tour will be conducted by Walter F. Pretzer, proprietor of the Rutenik Gardens of Cleveland. Pretzer has traveled in many countries of the world, and is Director of Organization of the VGAA.

The trip will include attendance at the 14th International Horticultural Congress in Scheveningen, Holland, August 29-30. Countries visited will include England, Holland, Belgium, Germany, Switzerland, and France, with emphasis on the vegetable operations of these countries. There will be much free time for sightseeing.

Tour price per person is only $1,223 from New York, including passage to Europe on the S.S. Mauretania, and passage home by Pan-American Airlines and all necessary expenses.

Address inquiries to Walter F. Pretzer, the Organizer, American Express Company, 1425 Euclid Ave., Cleveland 15, Ohio.

Cold Hurts Vegetables

FLORIDA—The sharp cold of March 26 to 30 heavily damaged tender vegetables growing in north and west Florida, and caused light damage as far south as central Florida.

The damage in the north and west section would probably have been heavier except for a prolonged drought which had delayed germination. Rains following the cold were beneficial in reviving the young crops.

In the area hardest hit, the largest acreage of susceptible vegetables was watermelons. West of Live Oak, nearly all the watermelon acreage above ground was killed. The potato crop in Escambia county was killed, and in other areas retarded. Young cucumber plantings in the Gainesville area were damaged, and some replanting has been done. Snap beans were also set back in that area.

In central and south Florida, spring crops are making fair to good progress. Shipments are well above the same period last year.—*George M. Talbott, Agr'l Field Representative, Orlando.*

Social Security

PENNSYLVANIA—A resolution urging revision of the new Social Security amendment was passed at the recent meeting of the Pennsylvania Vegetable Growers Association. The resolution read, in part, "Growers wish to comply with the law, but feel that they are faced with an impossible job of record-keeping . . . Therefore, we request that agricultural labor be required to earn a minimum of $200 from a single

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—*A. A. Dun*
College Park

CALENDAR OF COMING MEETINGS AND EXHIBITS

June 3—Washington Potato and Onion Shippers Association annual meeting, Chinook Hotel, Yakima. Fred Ramsey, Sec'y, 100 N. 7th Ave., Yakima.

June 19-22—Idaho Shippers Association annual summer meeting, Grand Teton Lodge, Moran-Jackson Hole, Wyo. Edd Moore, Exec. Sec'y-Mgr., Idaho Falls.

July 27-28—Pennsylvania Potato Growers, Inc., field days, Potato City.—James A. Hannah, Sec'y, 5235 N. Front St., Harrisburg.

Aug. 1-3—United Fresh Fruit and Vegetable Association, 7th annual Merchandising Conference, Conrad Hilton Hotel, Chicago. Assn. hdqtrs: 777 14th St., N.W., Washington 5, D.C.

Aug. 9—Indiana State Vegetable Growers Association summer meeting and field day, Purdue University, Lafayette.—F. C. Gaylord, Sec'y, Lafayette.

Aug. 9-11—Ohio Pesticide Institute Summer meeting and field tour, Wooster and various points in northern Ohio.—J. D. Wilson, Sec'y, Wooster.

Aug. 11-Sept. 25—Vegetable Growers Association of America tour visiting England, Holland, Belgium, Germany, Switzerland, and France, including attendance at 14th International Horticultural Congress, Scheveningen, Holland, Aug. 29-30. Tour conducted by Walter F. Pretzer, American Express Company, 1425 Euclid Ave., Cleveland 15, Ohio.

Aug. 16-20—Centennial of Farm Mechanization, Michigan State College, East Lansing.—A. W. Farrell, Head Agr'l Engng. Dept., MSC, East Lansing.

Sept. 19-21—Texas Citrus and Vegetable Growers and Shippers, Inc., Shamrock Hotel, Houston. —Austin E. Anson, Exec. Mgr., 306 E. Jackson, Harlingen, Tex.

Oct. 4-6—Florida Fruit & Vegetable Association annual convention, Hotel Fontainebleau, Miami Beach.—Geo. Talbott, 29 S. Covit St., Orlando.

Oct. 9-11—Produce Packaging Association, 1955 Convention and Exposition, Conrad Hilton Hotel, Chicago, Assn. hdqtrs: 500 Fifth Ave., New York 36, N.Y.

Nov. 1-3—Florida State Horticultural Society 67th annual meeting, Fort Harrison Hotel, Clearwater.—Ernest L. Spencer, Sec'y, Bradenton.

Dec. 5-8—Vegetable Growers Association of America 47th annual convention, Sheraton-Park Hotel, Washington, D. C.—Joseph S. Shelly, Sec'y, 528 Mills Bldg., Washington 6, D.C.

Jan. 23-26, 1956—United Fresh Fruit and Vegetable Association annual meeting, Hotel Roosevelt, New Orleans, La. Association headquarters: 777 14th St., N. W., Washington, D.C.

employer during the year . . ."

The group also requested that research be conducted into the problems confronting *celery growers* in Lancaster and surrounding counties. They want evaluation of new varieties, and control of tarnish plant bug and a seemingly new disease which causes russeting on the petioles.

New officers are Joseph Weinschenk, president; Fred Brehm, vice-president; E. J. Fleming, past vice-president; James E. Garrahan, secretary-treasurer. Directors are Leon Van Tyle, Donald Grimshaw, J. Harold Arnold, Allen Hostetter, Gilbert Watts, Amos Funk, Clair Allison, Herman Hostetter, Charles K. Hallowell, Paul Raul, Louis Orient, and Victor Snyder.—*James E. Garrahan, Sec'y, Kingston.*

Glorified Farmers' Market

MARYLAND—California and Florida will have no corner on the glorified Farmers' Market idea when plans of a Baltimore group are completed for a giant Farmers' Market on Pulaski Highway, Route 40, north of the city.

Plans call for housing 400 individual outlets in one group. A parking lot will take care of 3,000 cars, and there will even be playgrounds and nurseries for the children.

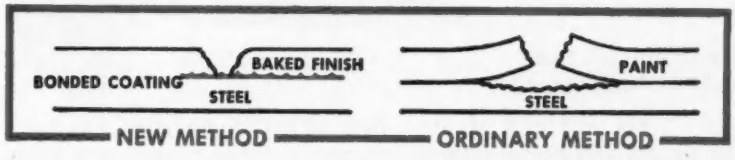
A former secretary of the Maryland Vegetable Growers Association (1922-1945) and vegetable specialist, Walter R. Ballard, died last month at the age of 76. —*A. A. Duncan, Ext. Veg. Crops Spec., College Park.*

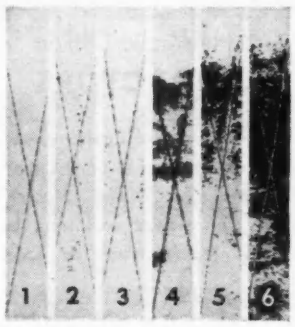
New Coating Protects Myers Sprayer Tanks

DEFIES SPRAY MIXTURES THAT SOFTEN ORDINARY PAINT IN MINUTES

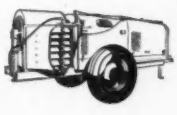
This amazing new tank-saver coating provides positive protection against the corrosive action of strong spray solutions that can ruin high-quality, uncoated steel tanks in a few months. It is a permanent baked-on finish which is applied over a special coating actually bonded to the steel. If the finish is damaged by scratches or impact, the chemical bond confines corrosive action (see drawing). Ordinary methods of painting permit liquids to "creep" under the paint and attack the metal.

TESTS PROVE LONGER TANK LIFE

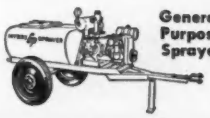




The new finish assures longer tank life by eliminating paint peeling and flaking that clog spray nozzles, pumps and strainers. Test panels prove it. Panels 1, 2 and 3 received the new bonded coating; panels 4, 5 and 6 received ordinary treatment. All panels were scratched and immersed in a strong solvent present in many spray mixtures. Result: after several weeks, panels 1, 2 and 3 lost no paint; others were stripped nearly bare.



Concentrate Field Crop Sprayer



General-Purpose Sprayer

SEE YOUR Myers SPRAYER DEALER TODAY

Myers POWER SPRAYERS
WATER SYSTEMS AND WATER SOFTENERS

THE F. E. MYERS & BRO. CO. • DEPT. AV-5, ASHLAND, OHIO

The
"Stainless-Steel Streamliner"
The World's Most Modern Concentrate Sprayer

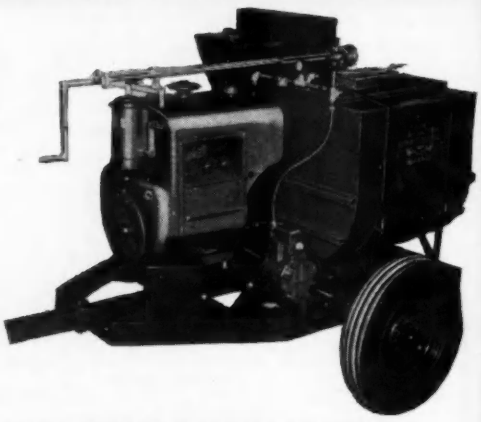
200 Gallon
Stainless-Steel Tank

Total Weight
Less Than One Ton

The Tried, Tested and Approved "BUFFALO TURBINE"
COMBINATION SPRAYER AND DUSTER

Large Enough
For The
BIG GROWER

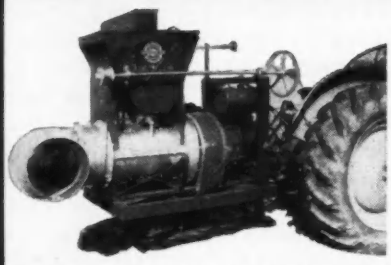
Within The Price
Of The
SMALL GROWER



50 or 100 Gal. Tank
Skid or Trailer Model

For Orchard or Row Crop Spraying and Dusting

The "Buffalo Turbine" 3 Point Duster



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ALL TRACTORS

The most powerful duster covering the greatest area on the market today. The "Buffalo Duster" has its own power and may be used on tractor-truck or jeep.

The Exclusive
"BUFFALO TURBINE"
Axial-Flow Blower
Used in All Models
Prices Start At Less Than $1,000

BUFFALO TURBINE
AGRICULTURAL EQUIPMENT CO.
INC.
GOWANDA, NEW YORK

Gentlemen—Please send me full information on the Buffalo Turbine Sprayer-Duster.

I have approximately.....acres

in fruit consisting mostly of.....

.....

Signed .....

.....

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☐ Please arrange a demonstration.

INSULATING Yuma's Lettuce

Vermiculite encourages seed growth and increases yield

By SAMUEL A. SICILIANO

THE truck driver's brow furrowed under the brim of the hat shading his eyes from the glaring Arizona sun. "I've delivered a lot of vermiculite to this area but it's always been to housing projects. What are they going to do with insulating material at a lettuce field?"

The driver had his mystery explained when he unloaded his cargo at the Woods Company field just east of Somerton. He saw a practical application of the results of tests with vermiculite which proved that the insulating material would improve lettuce seed germination, giving faster and more uniform seedling emergence.

Dr. W. D. Pew, horticulturist with the University of Arizona, and Al Face, Yuma County Farm Agent, applied the material in co-operation with Sidney Woods. Large-scale use of vermiculite is scheduled to begin soon in the Woods lettuce operations.

Method of Application

The vermiculite, a fluffy, lightweight material, was applied with a makeshift attachment on a 4-row lettuce seed planter. Woods plans to build a permanent attachment soon. The vermiculite was banded over lettuce seeds directly behind the planting shoe in a strip ½ inch deep and ¾ inch wide. Seven sacks of vermiculite per acre are usually needed, at a cost for material of approximately $1.50 per sack. Woods hopes to lower the application rate to 5 sacks per acre with careful application.

Attached to the commercial vegetable sled, the vermiculite hopper allows the material to pour through flexible tubing to spouts at the rear of the seeder units. It flows directly over the seeds after they are cov-

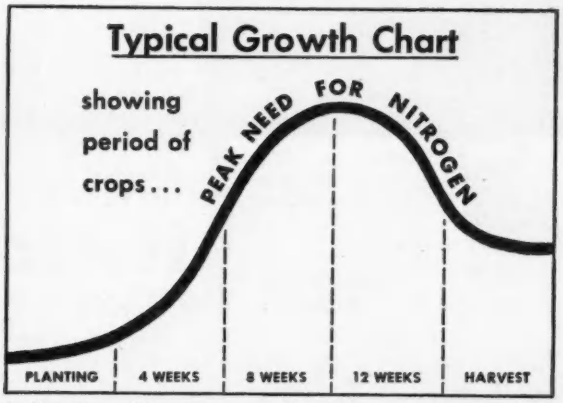
(*Continued on page* 17)

Applying vermiculite to Sidney Woods' lettuce.

1. "NuGreen" works fast as a foliage spray. Combine it with pest-control sprays to eliminate separate nitrogen applications. Saves time, labor. Won't corrode equipment.

2. "NuGreen" is efficient for side dressing or top dressing. "NuGreen" resists leaching, stays in the soil to feed your crop yield-building nitrogen as it grows.

3. "NuGreen" can be applied in any irrigation system to save you time, labor. "NuGreen" reaches roots, because it isn't fixed in top few inches of soil.



4. "NuGreen" feeds crops when they need it most. Different crops have top need for nitrogen at different growth stages. "NuGreen" will feed your crop as needed.

To feed your crops nitrogen when they need it most

...use NuGreen® FERTILIZER COMPOUND

"NuGreen" is concentrated, free-flowing, and readily soluble in water. It comes in 80-lb. bags. There's a place on your farm where Du Pont "NuGreen" can increase your profits. See your dealer for "NuGreen," today. Ask for free literature giving crop recommendations.

E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware

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REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

NuGreen® FERTILIZER COMPOUND

Your best buy in supplemental nitrogen

Modernize-speed "problem" growth clearing anywhere!

with PAT PENDING **Hoffco's** *Portable*

POWER TOOL!

• CUTS GRASS, WEEDS • CLEARS SAPLINGS
• SLASHES BRIARS • FELLS TREES

Flush to the Ground—Leaving No Dangerous Stubble!

Clears and cultivates *anywhere*—over rough land, through dense growth, and even *under water*—the gasoline-operated Hoffco portable Power Tool! *Now*, work *5 TIMES FASTER*—cutting "from a blade of grass to 18" trees"! The operator works in an *upright position* with the light-weight Hoffco Power Tool comfortably sling-balanced over his shoulder—*clearing at a walking pace!* Your time is worth money—let the Hoffco Power Tool pay for itself with the very first hours of operation. Only the Hoffco Line offers you the wide variety of cutting and cultivating operations, with just one portable Power Tool—*at the lowest price in the field!*

"Hoffie" says: SEE HOFFCO POWER TOOLS IN ACTION NOW! Write for your free booklet—the complete story of these tools!

Job-tested by the thousands throughout the United States and foreign countries—*under all conditions.*

Hoffco, inc. DEPT. AV
RICHMOND, INDIANA

The New *Powell* TOMATO SEEDER

A Check Row or Hill Drop Tomato Seed Planter

CHECK ROWING PERMITS LATERAL AND CROSS CULTIVATION . . . HILL DROPPING ELIMINATES HAND THINNING

- **DROP CONTROLLED SEEDS**
  Number of seeds dropped at hills controlled by selection of seed plates. Seeds are forced into plates in metered quantities.
- **ELIMINATES THINNING**
  Hand thinning is greatly reduced or eliminated by hill spacing.
- **FACILITATES HARVESTING**
  Harvesting facilitated by pickers working crosswise between driveways. No stopping to carry out loaded hampers.
- **DROP CONTROLLED FERTILIZER**
  Quantity of fertilizer dropped at hills or continuously along row controlled by adjustment of feed gate.
- **ELIMINATE HAND CULTIVATION**
  Hand cultivation is eliminated by cross cultivation in check row planting and reduced in hill drop planting regularly spaced hills.

Illustrated is the POWELL TOMATO SEEDER attached to tractor. . . Convenient three point hitch can be mounted or unmounted in a very few moments.

Pat. No. 2,532,191
Pat. No. 2,532,192
Others Pending

POWELL SEEDER COMPANY
Kokomo, Indiana

INSULATING LETTUCE

(*Continued from page* 14)

ered with ⅛ inch of dirt pouring in from behind the planting shoe.

Six major advantages of vermiculite are 1) germination improvement; 2) more uniform and faster seedling emergence; 3) improved seedling and plant uniformity; 4) possible reduction in seeding rates; 5) possible reduction in amounts of irrigation water needed to keep seedbeds moist; 6) increased yield.

Basically, vermiculite keeps the temperature below the 80° mark that stops lettuce seed germination. Also, it absorbs water like a sponge, allowing the thin coating of dirt over the seed to remain cool and moist. Irrigation adds to the advantage of the material, for it gains up to 10 times its weight in water, holding the material in place.

The only problem so far seems to be that encountered by growers who followed their normal planting rate. There was some overplanting on the part of those who expected a normal amount of non-germination, since almost all seed planted germinates.

Tests at the Mesa, Ariz. experiment station have shown that vermiculite applied in a one-inch band over the seed row resulted in 61 seedlings. This compared with 26 seedlings in check plots where vermiculite was not used.

Mesa tests also showed that vermiculite banded over the seed row gave 39 four-dozen size heads per plot, the size most requested by lettuce buyers, as against 24 where no vermiculite was used. THE END

TOO MUCH POTATO ACREAGE PLANNED

POTATO growers are urged by the USDA to re-examine their acreage plans for 1955 and to make some realistic adjustments downward.

The USDA has recommended a total late-crop production of 272 million bushels. On the basis of March 1 planting plans in the 29 late states, average yields will produce a crop 8 per cent larger than recommended and 2 per cent larger than 1954 production.

The USDA cautions: "Excess potato acreage results in too many potatoes, difficult marketing conditions, and unsatisfactory prices. The remedy lies with potato growers. The idea of a potato grower doubling his acreage when his neighbor cuts down is the thing that has been producing surplus potatoes. Growers should stand together, keep acreage in line, and make potato growing profitable."

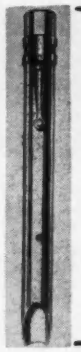
VEGETABLE PLANTS

Cabbage, Onions, Tomatoes, Pepper, Collards, Broccoli, Brussels Sprouts, Cauliflower, Eggplants, and Sweet Potatoes.

Best strains of leading varieties. Shipments catering to market gardeners' demands. Free price list.

TEXAS PLANT FARMS

JACKSONVILLE, TEXAS



POCKET MICROSCOPE

3 BILLION DOLLAR

loss each year in Plant, Fruit and Vegetable production caused by insect and plant diseases.

HOW MUCH DO YOU LOSE?

YOU and YOUR HELPERS should have a pocket microscope ready for instant use in the study of scales, red spiders, mites, insects and fungi, in fields, beds or greenhouses.

ORDER NOW—BE SURE

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Untreated plant, Valiant variety, produced tomatoes at left. First flower cluster on Valiant plant at right received growth regulating spray. Fruit from treated plant ripened fully three weeks earlier.

EARLIER TOMATOES

With Growth Regulators

By S. H. WITTWER
Michigan State College

GROWERS specializing in the production of early market tomatoes frequently have problems of obtaining a satisfactory set of fruit on the first clusters. The most important factor controlling fruit setting of tomatoes is temperature. Most commercially important varieties set fruit satisfactorily only at night temperatures between 59° and 68° F.

The extent to which the climate in a given area provides night temperatures within this range during flowering and fruiting is important for successful production. Many early plantings begin to flower before the weather has warmed sufficiently for fruit set. The blossoms drop on the lower clusters, fruiting is delayed, and the plants appear over-vegetative.

Each tomato type differs in its temperature requirement. Earliness in some varieties is in part their ability to set fruit while nights are no warmer than 50° to 55° F. However, good fruit set seldom occurs on Rutgers and other late canning types until after several successive nights with temperatures no lower than 62° to 65°F. In general, the early determinate (self-topping bush) types such as Victor, Early Chatham, Fireball, etc., will set fruit over a much wider temperature range than indeterminate varieties.

A practical reason for knowing the controlling influence that night temperatures have on tomato fruit setting is that the first big volume of local tomatoes and the date the price breaks on the market in any locality can be predicted by knowing when night temperatures become favorable for fruit setting. These sustained periods of ideal fruit setting night temperatures (59° to 68° F.) precede fruit ripening by 48 to 50 days.

A remarkable demonstration of this relationship occurred in Michigan during the 1954 season. On August 2 the average wholesale price received by growers on the Detroit market for a 14-pound basket of tomatoes was $2.50. One day later (Aug. 3) the price had dropped to $1.25, and the next day Aug. 4) to $1.

Weather records revealed that prior to June 10, night temperatures in the Detroit area were in the 40's and low 50's. However, beginning June 10 and continuing to June 26 temperatures were ideal (between 59° and 68° F.) for fruit setting. Fifty days after the beginning of this period the price broke. Fortunately, growers of early tomatoes can now partially overcome this weather hazard.

Tomatoes will not set in cold weather because the pollen which is necessary for fertilization does not develop. Fertilization cannot occur and the natural hormone stimulation necessary for fruit to set is absent. This serious limitation can be overcome, however, by artificially produced hormone substances applied as sprays to the flowers. Fruit can

be set irrespective of cold nights. On the other hand, if temperatures are optimum no benefit from hormone sprays is realized except a slight increase in fruit size.

Spraying Flower Clusters

Para-chlorophenoxyacetic acid at 25 to 30 parts per million has generally proven the most satisfactory spray. Several commercial preparations contain it as the active ingredient. Growers have found that hand spraying of individual flower clusters is preferable to spraying the entire plant. The chemical should be applied to the first clusters after the majority of their flowers have opened, and should be directed down and at the cluster and away from the growing tip and young leaves of the plant.

Whole plant spray or dust formulations are not recommended. Invariably they reduce total fruit yield and often cause undesirable flowering and fruiting responses after the early pickings.

The benefits of growth regulating sprays to promote earlier fruiting of tomatoes are not without disadvantages. Treated fruits which ripen during extremely hot weather tend to soften more readily, the stems

Growth regulating spray should be applied to first clusters after majority of their flowers have opened and should be directed down and at clusters and away from growing tip and leaves.

may adhere tightly to the fruit, and the seed locules often contain greater amounts of green pulp. However, these defects are minor when tomatoes ripen 10 days to three weeks earlier than on untreated plants, and command a considerably higher price. THE END

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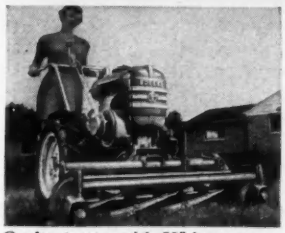

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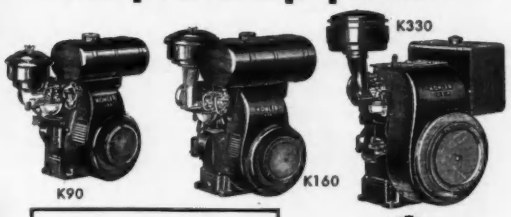

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CONTROLLING CORN WILT

Temperature records will tell early sweet corn growers if the disease is going to be a problem

EVERY sweet corn grower has at some time or other come in contact with Stewart's disease or bacterial wilt. Many growers of the East and Midwest have at times disced under an entire crop, so severe was the disease.

Now we have four avenues of approach in controlling this disease. The most widely used method is spraying corn foliage with DDT to control the corn flea beetle, the insect which carries the disease overwinter and infects new fields in the spring.

Another method is a single application of an insecticide, dieldrin, to the soil at corn planting time. This, too, is aimed at controlling flea beetles. Still another approach is the use of antibiotic sprays against the bacteria itself. The breeding of varieties which show high resistance to the disease is the final approach.

Foliage Sprays

Several states have developed effective spray schedules for controlling corn flea beetles. Dr. J. Alfred Adams, of the New York Experiment Station at Poughkeepsie, suggests that corn growers intensify their spray applications during the early stages of the corn plant. He recommends applying foliage sprays just as soon as the first seedling tips show above ground, even before the first leaf has unrolled. DDT emulsion sprays should be applied at 4-day intervals, with a maximum of 6 sprays for most susceptible varieties of early sweet corn planted in April or early May.

Guiding factors in the number of sprays to be applied are time of planting, variety grown, and flea beetle population in the field. The earlier the planting date the more sprays that will be needed. Corn planted in June or July often does not show wilt because the high temperatures practically inhibit the disease. So Stewart's wilt is a real problem of the early corn grower.

An early variety such as North Star will need all 6 sprays. Others, as Ioana for example, which are highly resistant to wilt, would need only the first 2 or 3 applications to reduce flea beetle population.

Dr. Adams recommends that New York growers, and possibly others, use a 25 per cent DDT emulsion concentrate of a grade safe on corn. This is mixed at the rate of 2 quarts in 10 gallons of water, and applied at the rate of 10 gallons per acre. The spray should be made uniformly on the plants and on the ground in order to kill all flea beetles if possible.

Growers using airplane applications of DDT for flea beetle, should apply 3 quarts of 25 per cent emulsion per acre.

Each grower must keep close check on his corn fields to see that flea beetles are kept at a minimum. If populations exceed one beetle per 100 corn plants, DDT sprays should be started, regardless of when the previous application was made. DDT sprays applied later for control of corn borer and corn ear worm also help keep flea beetles in check.

Fields sprayed with DDT schedules made normal yields of around 12,000 marketable ears per acre in New York last year. Unsprayed

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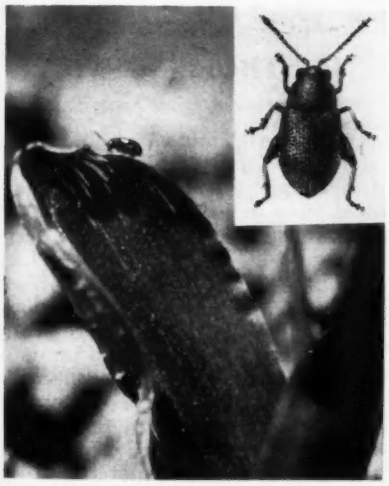
Temperature Influence

It is possible to predict fairly accurately an outbreak of Stewart's disease in a given area before corn planting time. The prediction is based on the sum of the average temperatures for the months of December, January, and February. In New York, if the sum falls below 97°, severe wilt is unlikely. If it goes above 97°, severe wilt outbreaks are pretty certain to occur. In Illinois and Ohio the turning point is set at 90° sum-of-average temperatures.

It works like this: Suppose the average temperature in central Illinois for December was 30°, for



Upper right, corn flea beetle, and left, beetle feeding on corn plant in 2-leaf stage. Both much enlarged. Adult beetle is actually 1/16 inch long. *Photographs courtesy New York State Agricultural Experiment Station, Geneva.*

January 25°, and February 30°. The sum would be 85°. This is below the 90° mark for Illinois, so chances for wilt are negligible. If the sum happened to be 95°, there would be good chances for wilt the following growing season. This index is becoming quite useful to corn growers in the East and Midwest.

Ground Sprays

Dr. William H. Luckmann, of the Illinois State Natural History Survey Division, Urbana, reports good control of corn flea beetles with a single ground application of dieldrin at corn planting time. He varied rates from ½ pound to 3 pounds per acre of actual dieldrin.

Results were good at all dosages, but fields sprayed with 1½ pounds or more per acre showed no wilt. Even where 1 pound of dieldrin was used the disease infected only 3 per cent of the plants. Adjacent unsprayed fields showed from 10 to 29

(Continued on page 22)

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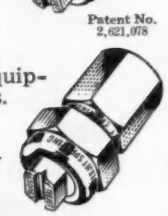

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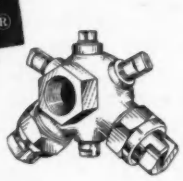

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Streak or blight on leaves of half grown corn plant caused by Stewart's disease. Note flea beetle on upper leaf. *Photograph courtesy New York State Agricultural Experiment Station, Geneva.*

CONTROLLING WILT

(*Continued from page* 21)

per cent wilt infection. Over 600 acres were sprayed with dieldrin in Illinois last season, and several hundred more will be sprayed this year.

Commercial preparations of dieldrin contain 1½ pounds of actual dieldrin per gallon, and retail from $7 to $8 per gallon. Applications are made either just before the corn is planted, or just after and up until the corn seedlings break through the ground. An ordinary boom sprayer does the job effectively. Light cultivation after application helps in making the chemical more effective.

Antibiotics

Dr. John Natti, working at the New York Experiment Station at Geneva, last year tried one of the new antibiotics, streptomycin, for direct control of Stewart's disease. His first results show this method of control worth considerable more study. The antibiotic did not cause infected plants to recover; however, in plots sprayed with streptomycin, bacterial wilt did not spread nearly as much as in check plots receiving no spray. This is a new approach that looks promising.

Wilt-Resistant Varieties

Insect control measures outlined for the control of Stewart's disease may be considered as stopgaps. The best solution to the problem lies in the breeding of wilt-resistant varieties. As pointed out, some varieties, especially the later ones, show more resistance than others. In Ulster County, New York, last year these varieties showed considerable wilt resistance: Sweetangold, Calumet, Iochief, Asgrow Golden 50, and Seneca Supermarket. THE END

25 TONS PER ACRE

(*Continued from page* 10)

using about one-half pint per plant.

Varieties for main crop planting vary in different areas and growers should consult their local agricultural experiment stations for adapted varieties. Extensive trials at Purdue and elsewhere in the Midwest indicate that Rutgers, Kokomo, Urbana, Purdue 1361, and Rutgers x Pritchard F_2 hybrid are most commonly used in the corn belt. During the past five years, under corn belt conditions, the Rutgers x Pritchard F_2 hybrid has been about 10 days earlier than Rutgers and outyields it and similar varieties about 15 per cent.

If growers are using tomato plants, U. S. No. 1 plants are most desirable. Plants to meet these requirements must be from 6 to 9 inches tall, well-grown but not soft, and straight and free from disease. Since tomatoes are a warm season crop, they should not be set until all danger of frost is past.

Where direct seeding into the field is done, seeding usually occurs from April 15 to May 10 in the corn belt. Direct seeding does best on mellow, fertile soils that are comparatively free of weeds. Detailed directions are available from any cannery fieldman.

After plants are set, level shallow cultivation similar to corn cultivation is followed until the field is laid by.

Spraying a "Must"

As to spraying, Indiana champions have found it a "must." Since weather conditions vary so widely, the only spray program for cannery tomatoes is the one worked out by the agricultural experiment station in the state in which the grower resides.

Spraying six times, or once a week from August 2 until September 6, paid off with 14.9 tons more tomatoes per acre than that obtained from unsprayed plants in the 1954 trials carried on by Dr. R. W. Samson, of Purdue. Spraying once every two weeks during the same period resulted in an increase of only 5.9 tons.

The pay-off in a well-grown field of tomatoes comes in correct picking. Usually a picking every 10 to 14 days gives a higher percentage of U. S. No. 1 tomatoes. Picking crews should be carefully supervised and trained to pick only red ripe tomatoes. This results in a higher grade and price.

Finally, growers should watch the pickers and the grading throughout the season. After the crop is picked, to get the best grade, prompt delivery to the canning factory is imperative.

By following the "know-how" accumulated through the past 25 years, the top-notch growers are regularly securing yields that make tomatoes a profitable crop that fits well into our corn belt program. THE END

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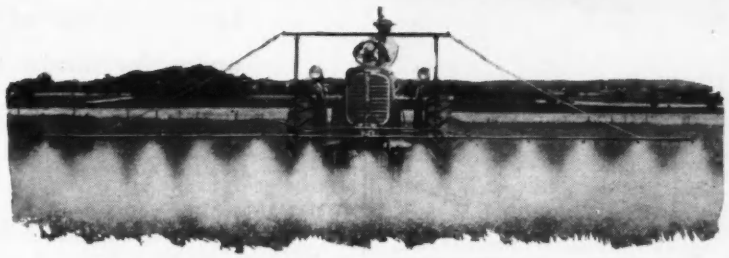

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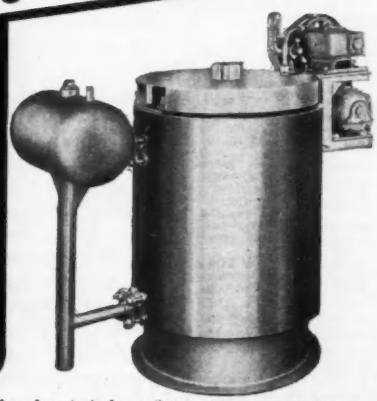

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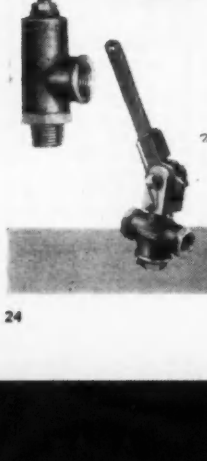

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FERTILIZING VEGETABLES in the Everglades

Special needs of Florida's organic soils make fertilizing a fine art for growers

By W. T. FORSEE, Jr.

Florida Everglades Experiment Station

THE Florida Everglades consists of a vast level grass prairie which has become a valuable agricultural area as a result of water control. Its climate and soil adapt it to the production of winter vegetables. Some 65,000 acres are devoted to intensive vegetable production with some areas growing as many as 3 or 4 crops annually.

The highly organic soils consist of both peat and muck types with ash contents ranging from 8 to 60 per cent, but mostly averaging around 10 to 12 per cent. These soils are underlaid with limestone and marl thus creating pH values favorable for growth of most vegetable crops without applications of additional lime. Since the soils contain as much as 3 per cent nitrogen, they furnish for many crops adequate supplies of available nitrogen except under extreme conditions of continued cold and high moisture associated with heavy rains or a high water table.

Minor Elements

All of these virgin organic soils are deficient in copper. Such deficiencies are exhibited as decreased growth which becomes evident soon after seed germination. Leafy crops usually exhibit a chlorosis which is more pronounced in the younger leaves. Corn shows severe necrosis of the leaf tips and growing point. Copper deficiencies are eliminated by soil applications of copper sulfate (25 per cent copper) or copper oxide (50 per cent copper) ranging from 12 pounds of copper equivalent per acre required for the initial application on virgin soils to annual applications thereafter of 2 to 3 pounds. Vegetable crops included in a rotation where copper sprays are used for disease control may need no additional soil applications of copper.

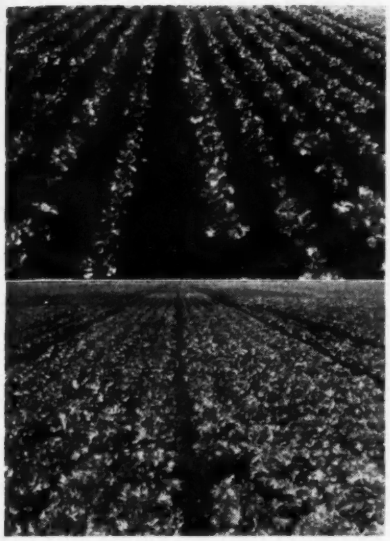
Crops growing on most of these soils may show deficiencies of manganese especially as soil pH values increase above 6.0. This deficiency which was so prevalent on beans in the early days of development of the area was called "bean yellowing disease" and adequately describes the chlorosis so characteristic of this deficiency.

Zinc deficiency, although not quite so prevalent as manganese, is frequently associated with the latter because both elements are similarly made less available by conditions which exist in the soil as the pH approaches 7.0. Zinc deficiency is characterized by a chlorosis and usually some leaf distortion.

Manganese and zinc, although in many cases effective as soil applications of 25 to 50 pounds of manganese sulfate and 15 to 20 pounds of zinc sulfate per acre, may be applied most effectively as nutritional sprays or dusts. In the event of severe deficiency, heavy soil applications made in bands are seldom as effective as spray applications consisting of 2 to 4 pounds of manganese sulfate and 1 to 2 pounds of zinc sulfate in 100 gallons of water. Dusts containing 10 per cent manganese sulfate, 5 per cent zinc sulfate, and 85 per cent sulfur are widely used on commercial plantings of beans.

Boron deficiencies which are quite prevalent in leafy vegetables and sweet corn may be corrected by soil applications of 10 to 15 pounds per acre of borax. Care should be exercised not to over-fertilize with borax because even on peat soils some injury may occur to sensitive crops. Borax is quite effective as a spray when applied during the early stages

Use of copper resulted in these striking differences in top and root development of carrots, removed from the soil 82 days after planting. Differences in growth between coppered (left) and untreated cultures began to show about two weeks after germination.



Above photographs show response of iceberg lettuce growing on peaty muck soil to broadcast applications of finely ground agricultural sulfur: Upper, no treatment, pH 6.30; lower, 1,500 pounds sulfur per acre, pH 5.90.

of plant growth. Solutions of ½ to 1 pound in 100 gallons may be used at rates as high as 150 gallons per acre.

Major Elements

Although plants growing on the organic soils of the Everglades have shown some rather spectacular responses to applications of the minor elements, this in no way renders the major elements of any less importance. Virgin Everglades peat soils are very deficient in available potash and require rather generous applications of this element for satisfactory growth of vegetable crops, particularly the leafy crops and sweet corn. Attempts to substitute sodium for a part of the usually heavy potassium requirements have met with little success.

The virgin peat soils in most cases contain sufficient phosphorus for many vegetable crops. However, about 6 to 8 per cent phosphate is usually included in the initial fertilizer application. As the soils become more thoroughly decomposed they develop some phosphate fixing characteristics and their phosphate requirements thus become greater. Muck soils show the same heavy phosphate requirements as the old, well-decomposed peats. Responses in these soils are usually greater to band than to broadcast applications of phosphate.

Some typical fertilizer formulas commonly used for vegetable crops on the Everglades organic soils are 0-8-24, 0-10-20, 0-12-12 and 0-15-5. Most of these include also the minor elements which may be declared on the fertilizer bag in terms of the per cent oxide. Many formulations are mixed according to specifications of individual growers. A formula frequently used for the initial broadcast application on virgin peat soils at the rate of 500 pounds per acre is 0-8-24 containing 3.0, 2.0, 1.0, and 0.8 per cent CuO, MnO, ZnO, and B_2O_3, respectively.

Soil Reaction

The pH values of these organic soils are of considerable importance in the utilization of the major and minor elements. Ash deposits left by burning of the top soil and proximity to the underlying lime rock sometimes cause pH values to rise above 6.0. This causes a reduction in the availability of phosphate and certain minor elements, as well as causing a change in biological population.

Tremendous yield increases have been obtained from applications of agricultural sulfur sufficient to lower the pH of the top soil to values below 6.0. Leafy vegetables are extremely responsive to sulfur treatment when the soil pH is above 6.0. On some crops the sulfur may be successfully applied in bands either alone or mixed with the fertilizer.

Because the successful production of vegetable crops on these soils depends upon adequate amounts of fertilizer and optimum ratios of mineral nutrients as well as a proper soil reaction, soil tests play an important role in determining fertilizer requirements. Many experiments have been conducted at the Everglades Experiment Station during recent years with vegetable crops in order to correlate soil tests for phosphorus, potassium, and other elements as well as soil pH, with vegetable crop yields. This information is being used to interpret soil tests conducted on samples from areas to be used for growing vegetable crops, and to make fertilizer recommendations. THE END

OWEN BARKLEY, of Martinsburg, Pa., has been appointed general manager of the Pennsylvania Co-operative Potato Growers, Inc., following the resignation of George W. Tallman.

Barkley has been general manager of Cove Farm Bureau Co-operative Association for the last nine years, following his service in the U.S. Army. From 1937 to 1943, he was assistant manager of Somerset Farm Bureau Co-operative Association. He is 35 years old, married, and the father of two children.

Owen Barkley

Tallman, who held the salaried position for the past two years will continue in his elected office of treasurer. He resigned in order to devote more time to his own operations at Tower City, where he has a 665-acre farm.

Tallman will continue to serve as secretary of the National Potato Council, and as a director of the Vegetable Growers Association of America.

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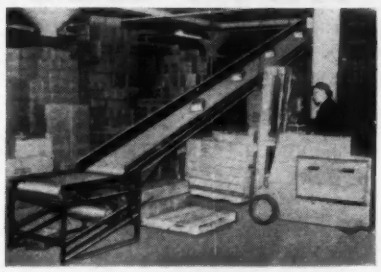

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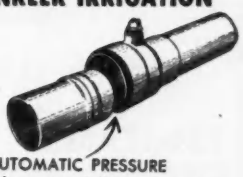

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SPRAY AWAY YOUR WEED TROUBLES

(*Continued from page* 9)

Copper may interfere with the effectiveness of herbicides, particularly the dinitros. To remove copper residues, add 1 gallon vinegar or commercial acetic acid to each 100 gallons of water, and allow to stand in the sprayer for two hours. Drain the sprayer immediately and rinse thoroughly with water.

Herbicides and the PFDA—Use of the foregoing methods is dependent upon registration of the product by the U. S. Pure Food and Drug Administration. Growers are warned that the use of a chemical on a food crop for which the compound is not registered may lead to confiscation of the crop if a residue is found on the produce. Tables of registered compounds will indicate the amount of residue, if any, permitted by current regulations. Do not use any herbicides unless the label states that the chemical may be used on the specific crop to be sprayed. THE END

SUGGESTED WEED CONTROL PRACTICES*

Rates given are for pounds of ACTIVE INGREDIENTS per acre covered.

CROP	CHEMICAL OR SYMBOL	RATE PER ACRE SPRAYED	TIME OF APPLICATION	WEEDS CONTROLLED	REMARKS
Asparagus (established beds)	CMU (Karmex W)	1½ to 2 lbs.	Before spears emerge in spring or after cutting season.	Annuals.	Best results obtained from 1½ lbs. applied after disking in spring and again after cutting season.
Beans (snap and lima)	DNBP (Premerge or Sinox PE)	3 to 4 lbs.	From emergence to crook stage before leaves emerge.	Annuals	Spray when temperature is between 65° and 85° F.
	DNBP	6 to 9 lbs.	Time of planting.	Annuals.	
Beets	TCA	7 to 10 lbs.	Just prior to come-up.	Annual grasses.	Spray on well-prepared seedbed.
	Common salt	200 to 400 lbs.	Post-emergence.	Annuals.	Requires 200 to 400 gals. water.
Cabbage Broccoli Cauliflower	TCA	5 to 8 lbs.	Just prior to come-up.	Annual grasses.	Use only on direct-seeded crops.
Carrots	Stoddard Solvent	75 to 100 gals.	After 2 true leaves have formed.	Annuals except ragweed.	Spray when weeds are not more than 2 inches high. Carrot roots should not be thicker than lead pencil.
Celery	Stoddard Solvent	75 to 100 gals.	In the seedling stage.	Annuals except ragweed.	Use only on seedbeds.
Onions (seeds, sets, and plants)	CIPC (Chloro IPC)	6 lbs.	From planting to crook stage.	Annual grasses, purslane, chickweed, and smartweed.	Do not apply a total of more than 12 lbs. per acre per year.
	CIPC (Chloro IPC)	6 to 8 lbs.	After 3 to 4 leaves.	Annual grasses, purslane, chickweed, and smart-weed.	Do not apply in flag stage. Direct spray at base of plant. May cause injury to fall-sown grains.
	Xanthogen disulphide (Herbisan)	10 lbs.	Pre- or post-emergence as above.	Annuals	Direct post-emergence spray at base of plant.
Peas	DNBP (Sinox PE or Premerge)	1 to 1½ lbs.	2 to 4 leaf stage or 4 to 6 inches high.	Annuals.	Temperature should be 65°-85° F. Not effective on grasses.
Potatoes	DNBP (Premerge or Sinox PE)	3 to 6 lbs.	Just prior to come-up.	Annuals.	On muck or mineral soil.
Spinach	CIPC (Chloro IPC)	1 to 3 lbs.	Immediately after planting.	Annual grasses, purslane, chickweed, and smart-weed.	Use 1 to 2 lbs. if temperature is below 60° F., 2 to 3 lbs. if above 60° F. Use 3 lbs. on muck soil.
Sweet Corn	DNBP (Sinox PE or Premerge)	4 lbs.	Spike stage (1 inch).	Annuals.	Temperatures should be 65°-85° F.
	2,4-D	1 lb.	Spike stage (1 inch).	Annuals.	May not control grasses. Do not use on early varieties such as North Star.
Cucumber Muskmelon Watermelon	NP (Alanap 1)	2 to 6 lbs.	Immediately after planting.	Annuals.	Apply within 1 day of planting.
	NP (Alanap 1)	2 to 4 lbs.	Just before vining.	Annuals.	No weeds should be visible.
Squash Pumpkin	NP (Alanap 1)	2 to 4 lbs.	Immediately after planting only.	Annuals.	Use only on varieties Zucchini, Boston Marrow, Delicious, Buttercup, Sweet Cheese.

*These practices are believed to be the best available. However, there are several other chemicals that work effectively on many of the crops. Consult your county agricultural agent or extension specialist for regional variations.

JACK FROST

(*Continued from page 7*)

Such protected plants mature their crops from two to four weeks ahead of unprotected seedings. A similar procedure is followed with tomatoes.

In eastern and midwestern areas where this type of cap is used, more difficulties are generally encountered than in California. Ventilation is most important wherever used. Small openings should be made in the caps when placed over plants in order to provide for free exchange of air and to let out moisture. The larger the plant, the bigger the opening. If this isn't done tender plants may be "cooked" under the caps on warm sunny spring days. Heavy rains sometimes beat caps down on plants, so they must be watched. Caps will protect tender plants from light frost injuries, but will give little protection from freezing temperatures.

In New England where caps are used on summer squash the chief advantage lies in keeping the temperature high around the plant. Plants get off to a better start. Logan N. Colp, manager of the Metzler Orchards at Cobden, Ill., reports that he is using Usco Waxed Kraft paper for caps on 25,000 tomatoes this year.

He made up his own caps, in cone shape, using about 2 square feet of paper for each cap. The base is 8 inches in diameter and the top has an opening about one inch in diameter for ventilation. Two wood strips hold the paper in shape, and their ends stick in the ground to hold the cap in place. The caps can be removed and used another year. Cost per cap is about 3 cents.

Another type of protector that has good weather resistance and nests and stores easily is made of lightweight transparent plastic.

Sprinkler Irrigation

In a few instances sprinkler irrigation is used to help prevent frost injury to tender vegetables and strawberries. A fine rain of low water volume is better than heavy application. Water is turned on about the time temperatures reach the critical low point and left on until temperatures are above any danger of injury.

The use of smudges or fires has found little use in protecting vegetable plants in the spring. They have found more use in protecting a tender unharvested crop from early autumn frosts. THE END

Plant protectors or caps are made by General Plastics Corporation, 1400 N. Washington St., Marion, Ind.; Germain's, Hotkaps Div., Los Angeles 21, Calif.; Paxton Products Co., P.O. Box 68, Riverside, Calif. Glassine and Kraft papers are made by Kalamazoo Vegetable Parchment Paper Co., Kalamazoo, Mich.

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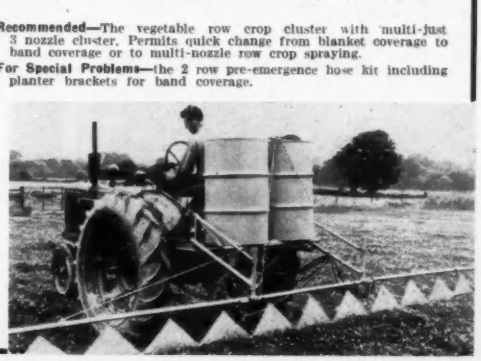

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A new cucumber box caught my eye. This one piece, die-cut box holds 24 select cucumbers. Fully packed, the box weighs approximately 20 pounds, which is about ⅓ of a bushel.

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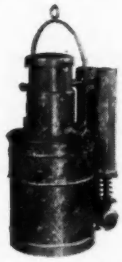

Each year birds cause vegetable growers tremendous damage. Since vegetable farming began, growers have been searching for ways to rid their plantings of birds. A new machine does the job at low cost. The machine simulates a shotgun explosion at 20- to 40-second intervals during the day. The cost of operation is about 2 cents an hour. Each machine protects 120,000 square feet in vegetable planting.

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Guaranteed Quick Starting

One of the best plant starters is known as Take-Hold. Take-Hold 10-52-17 is completely soluble and formulated for vegetable transplanting. To be fully up-to-date on this new and wonderful method of guaranteed quick starting for your vegetables this year, write Victor Chemical Works, 155 N. Wacker Drive, Chicago 6, Ill. They will send a fully illustrated booklet on Take-Hold.

Picks 'em Fast and Clean at Low Cost

Last summer I saw a new bean picker used in a large planting near Buffalo, N. Y. The new picker, which has been under development for five years, covers ¾ of an acre per hour, and will pick two rows at a time. The beans, along with most of the foliage, are stripped from the plant by steel fingers on revolving cylinders, and deposited on a conveyor belt. The belt carries the beans to a second belt which eliminates stones. A cleaner, operated by a small gasoline engine, cleans the beans of all foliage, and the cleaned beans proceed to the double bagging attachment. The machine is being used by most growers for second and third pickings, and the yields are just as good as those from hand picking. The cost is about .0542 per pound, considering all factors. Write B. E. Brewer, Chisholm-Ryder Co., Inc., Niagara Falls, N. Y.

Tuffy Tiller Has New Rotary Attachment

Last week our old friend, S. L. Allen, announced a new rotary tiller attachment for the popular Tuffy and Super Tuffy tractors. At the same time, rotary tillers are being made available for all Allen tractors. Several seasons of actual field testing and superb engineering make these new tillers a must for every vegetable grower. They are powered by a belt drive through the use of a small pulley on the side of the engine. The unit is of steel welded construction including separate clutches. Depth of tilling is controlled by precision measuring gauge wheels. The new units weigh about 38 lbs. and cut a swath up to 16 inches. Get full information by writing S. L. Allen & Co., Inc., 3419 N. 5th St., Philadelphia 40, Pa.

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Willoughby, Ohio

Field Bedding Sweetpotatoes

A NOVEL technique for producing sweetpotato plants has been developed at Schroer Plant Farms in Georgia. Mr. Schroer, a German-born machinist, utilized his talents in making a V-shaped plow to open sweetpotato beds in one operation.

Mr. Schroer has also adapted a weeder which is attached in the same manner as the opening plow and controlled by a hydraulic ram. The weeder is driven over the bed to loosen the crust.—*R. Sheldrake.*

Rear view shows V-shaped plow in action on Schroer Plant Farms opening sweetpotato bed.

After bed is opened by plow, farm hands place sweetpotatoes in bottom of the bed.

To complete the job, V-shaped drag is used to pull soil back over the sweetpotatoes.

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VG-1

Power Follows the Purse

HOW would you like to be a dairy farmer with the government holding 452 million pounds of butter over your market? Or a corn farmer with 606 million bushels in storage? Figures recently released show the following holdings by the Commodity Credit Corporation, purchased by the government in price support programs.

Product	Quantity (millions)		Value (millions)
Wheat	749	bu.	$1,962
Corn	606	bu.	1,003
Butter	452	lbs.	293
Cotton	1.8	bales	310
Cheese	438	lbs.	175
Cottonseed Oil (ref.)	593	lbs.	106
Wool	111	lbs.	78
Cotton Linters	664	lbs.	65
Dried Milk	268	lbs.	44
Other			196
Total			$4,231

There is no doubt that the higher prices supported by government loans and purchases help the wheat farmer, the corn farmer, and the dairy, cotton, and sheep farmer. But this help has put the government in business as a big brother to the farmer. As the government accumulates more surpluses the pressure on the farmer grows stronger. Today the government has $7.1 billion worth of stored products and commodity loans amounting to a $44.49 stake for every man, woman, and child.

The fruit and vegetable grower may bemoan the fact that he is not eligible for price supports because of the perishable nature of his product. But at the same time he should be happy that he is not at the mercy of one large buyer, and that with each year he has a new deal price-wise with no carryover to threaten his markets.

Let's Farm the Second Foot

IF it were possible for growers to observe the root development of their crops as critically as they follow the above-ground vine and foliage growth, practices would soon be adopted that would reduce many of today's crop production headaches.

If conditions could be brought about that would allow the plants to make maximum root growth in the subsoil, the frequent disastrous effects of short dry periods would be eliminated, resistance to disease would be greatly improved, yields would be larger and of better quality, and the net profits from an acre would be markedly increased.

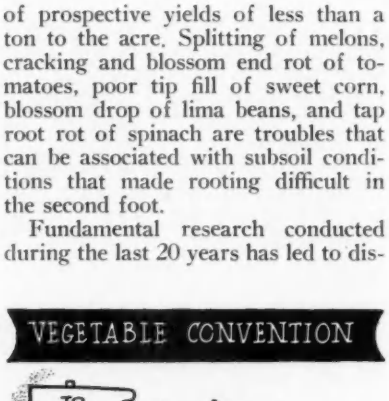
Several years ago, during a dry period, many snap bean fields in an important canning area were probed with a spear-pointed steel rod. With every increase in the force required to push the rod below plow depth there was a corresponding decrease in the height of the bean plants. In fields where the rod could easily be pushed to a depth of 24 to 30 inches, the beans were almost 2 feet tall and there were good prospects for yields of up to 3 tons to the acre.

Where considerable effort was required to push the rod below 10 inches, the plants were barely a foot tall and looked sick, with indications of prospective yields of less than a ton to the acre. Splitting of melons, cracking and blossom end rot of tomatoes, poor tip fill of sweet corn, blossom drop of lima beans, and tap root rot of spinach are troubles that can be associated with subsoil conditions that made rooting difficult in the second foot.

Fundamental research conducted during the last 20 years has led to discoveries of far-reaching importance to agriculture and of particular value to producers of rapidly developing vegetable plants. These experiments indicate that most plants required an abundance of oxygen in the region of their root tips to carry on respiration, for a release of the energy stored as sugars in their roots. This released energy was found to be essential not only for bringing about cell division and continued root growth, but also to be required for water and nutrient absorption by the roots of the plant.

It becomes obvious then that plants can neither grow nor function satisfactorily unless air containing adequate oxygen constantly reaches their expanding root systems. These facts are answers to, and the real reason for, continually following practices that promote good soil structure. A porous granulated soil allows fresh air to move into the second foot and results in increased productive capacity, and is part of the reason for more favorable crop growth on back furrows than on dead furrows. During dry, hot, windy summer days, if the roots have met with satisfactory soil structure conditions allowing them to ramify throughout the subsoil, they are able to obtain additional moisture that is equivalent to 2 to 4 inches of irrigation.

Modern agriculture, with its heavy, rubber-tired machinery that can operate on wet soils, is promoting compaction and soil structural breakdown that was impossible with one-horse equipment. If it takes over 50 to 75 pounds pressure to push a spear-pointed rod into the subsoil, plant roots are having difficulty extracting water and nutrients from this area, and may not even be able to penetrate it. Subsoiling, use of lime in the subsoil if needed, and the growth of deep-rooted legumes all help in promoting a better structure and a more valuable second foot. Profits can be more easily doubled by increasing productivity and quality on any given area than by expanding acreage. Farming the second foot may be the answer in many places.

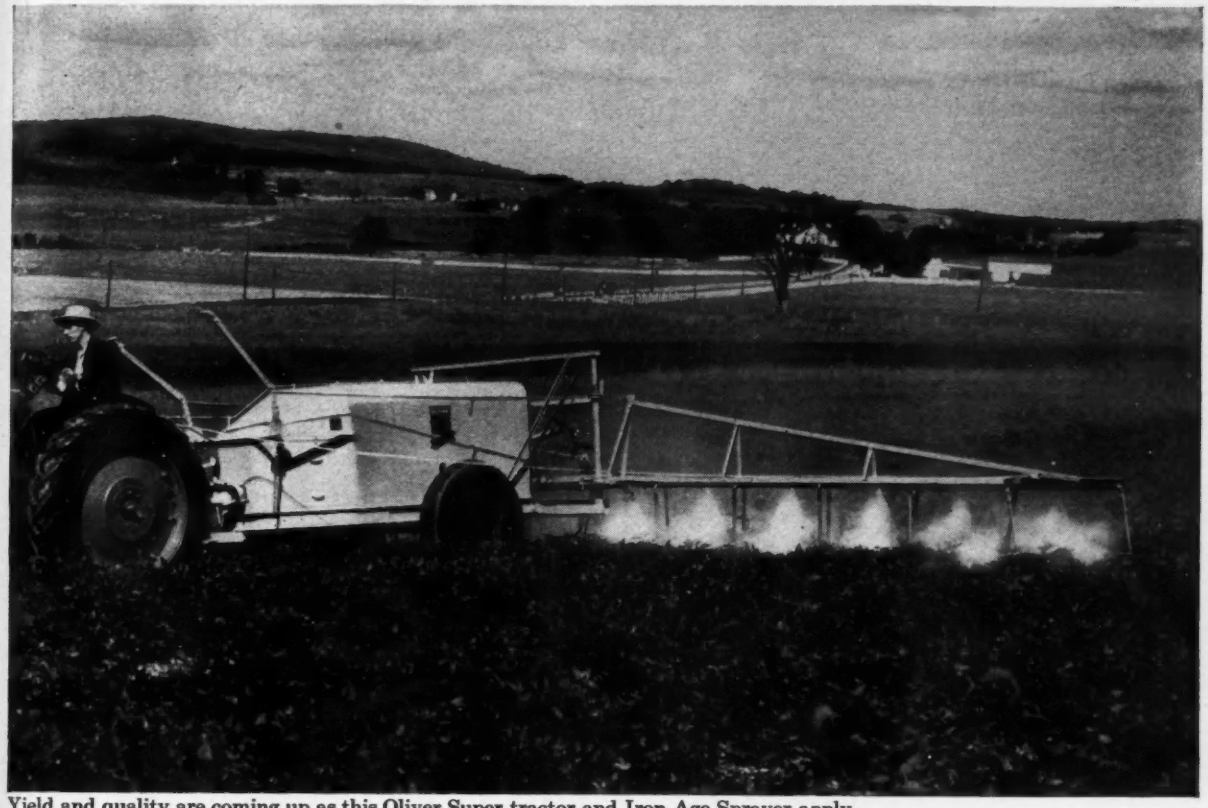


"These soiled hitch-hikers give all of us respectable-looking potatoes a bad name."

Coming Next Month

Irrigation Issue
featuring

- Locate a Dependable Water Supply
- How to Tell When to Irrigate
- Effect of Irrigation on Planting and Fertilizing Practices
- Temperature and Weather Influence Quality, Yield, Price
- How an Arkansas Grower Produces Top Quality Berries



Yield and quality are coming up as this Oliver Super tractor and Iron Age Sprayer apply wettable powders or emulsion concentrates. Not a stem or a leaf remains untouched.

Upgrade your vegetable crop with a full-coverage OLIVER IRON AGE SPRAYER

New pesticides hold the key to more marketable produce—bigger profits—provided they are applied right. But you can be sure they're applied right if you use a full-coverage Oliver Iron Age sprayer.

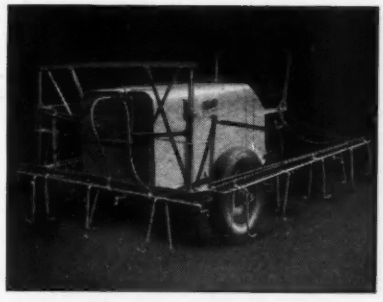
Low-cost PTO operated—you have your choice of pressures from 40 to 1000 lb. And there's a boom for every row width and crop condition—tailored to the crop. Scientifically designed down-drops and nozzles assure perfect coverage, no matter what kind of spray materials you're using.

Corrosion-resistant wood or metal tanks—dependable, built-in strainer protected pump—heavy-duty, high-clearance axle and frame keep you going with years of trouble-free service.

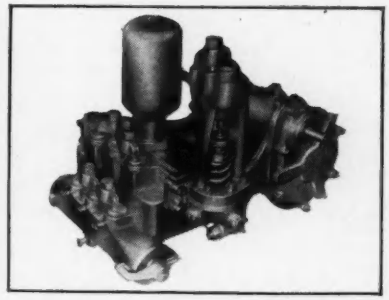
And for convenience, your Iron Age has complete hydraulic boom control from the tractor seat, safety-folding boom sections and your choice of tank sizes.

No matter what your vegetable spraying job is, you can't do better than to use an Oliver Iron Age.

The Oliver Corporation, 400 West Madison St., Chicago 6, Illinois.



The complete-coverage boom of your choice: side-mounted or symmetrical rear-mounted—hand operated or finger tip hydraulic control—lengths up to 60 feet.



Here's the heart of your dependable Oliver Iron Age sprayer—the efficient pump—available in your choice of models for 40 to 1000 pounds pressure, 10 to 50 gallons per minute capacity.

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